

## ABSTRACT OF THE INVENTION

Provided is a combustion engine having a combustion chamber. The combustion engine comprises an engine housing having an air intake port, a mixed conductor, a water intake port, an exhaust turbine and a hydrogen compressor assembly. The air intake port provides air to the mixed conductor which provides an oxygen-pure fraction of air to the combustion chamber by conducting oxygen ions in the air from a retentate side to a permeate side when the oxygen partial pressure on the permeate side is less than that on the retentate side. The water intake port provides water to the combustion chamber for combustion with hydrocarbon fuel and the oxygen-pure fraction of the air to produce exhaust fluid. The exhaust fluid expands in the exhaust turbine causing the turbine rotor to rotate producing mechanical energy. The hydrogen compressor assembly extracts hydrogen from the exhaust fluid and provides hydrogen to the exhaust turbine.